**ST. XAVIER’S COLLEGE**

**(Affiliated to Tribhuvan University)**

Maitighar, Kathmandu



**Computer Assignment #7**

**Submitted by:**

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**Submitted to:**

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**Source Code**

//---------------------------------------------------------------------------

#include <vcl\vcl.h>

#pragma hdrstop

#include <math.h>

#include "transformation.h"

//---------------------------------------------------------------------------

#pragma resource "\*.dfm"

TForm1 \*Form1;

//---------------------------------------------------------------------------

\_\_fastcall TForm1::TForm1(TComponent\* Owner)

: TForm(Owner)

{

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::butTransClick(TObject \*Sender)

{

outPanel->Canvas->FillRect(ClientRect); // Clear Canvas

int i ,j,tx,ty,a,b;

int h,w;

h =inPanel->Height; //Gets Canvas Height

w= inPanel->Width; // Gets Canvas width

tx= StrToInt(inTx->Text); // Gets translation X coordinates

ty= StrToInt(inTy->Text); // Gets Translation Y coordinates

//Translation

for(i=0;i<=h;i++){

for(j=0;j<=w;j++){

a=i+tx;

b=j+ty;

outPanel->Canvas->Pixels[a][b] = inPanel->Canvas->Pixels[i][j];

}

}

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::inRotateClick(TObject \*Sender)

{

outPanel->Canvas->FillRect(ClientRect); // Clear Canvas

int i,j;

int h,w;

h =inPanel->Height; // Gets Canvas Height

w= inPanel->Width; // Gets Canvas Width

float a,b;

float angle= StrToFloat(inRo->Text)\*(3.1415/180);

for(i=0;i<=h;i++){

for(j=0;j<=w;j++){

// Rotation

a=(i\*cos(angle)- j\*sin(angle));

b=(j\*cos(angle) + i\*sin(angle));

outPanel->Canvas->Pixels[a][b] = inPanel->Canvas->Pixels[i][j];

}

}

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::butScaleClick(TObject \*Sender)

{

float sx,sy,a,b;

int i,j;

outPanel->Canvas->FillRect(ClientRect); // Clear Canvas

sx = StrToFloat(inSx->Text);

sy = StrToFloat(inSy->Text);

int h,w;

h =inPanel->Height;

w= inPanel->Width;

for(i=0;i<=h;i++){

for(j=0;j<=w;j++){

//Scale

a=sx\*i;

b=sy\*j;

outPanel->Canvas->Pixels[a][b] = inPanel->Canvas->Pixels[i][j];

}

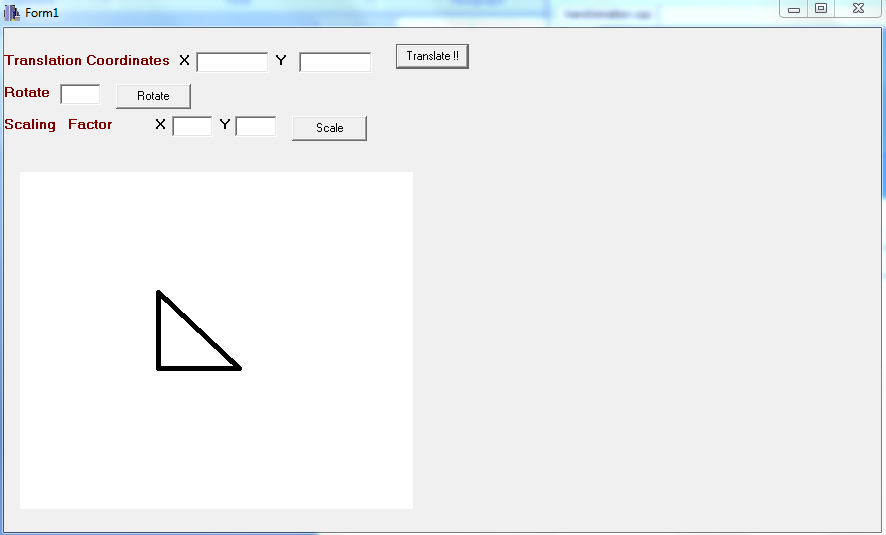
}

}

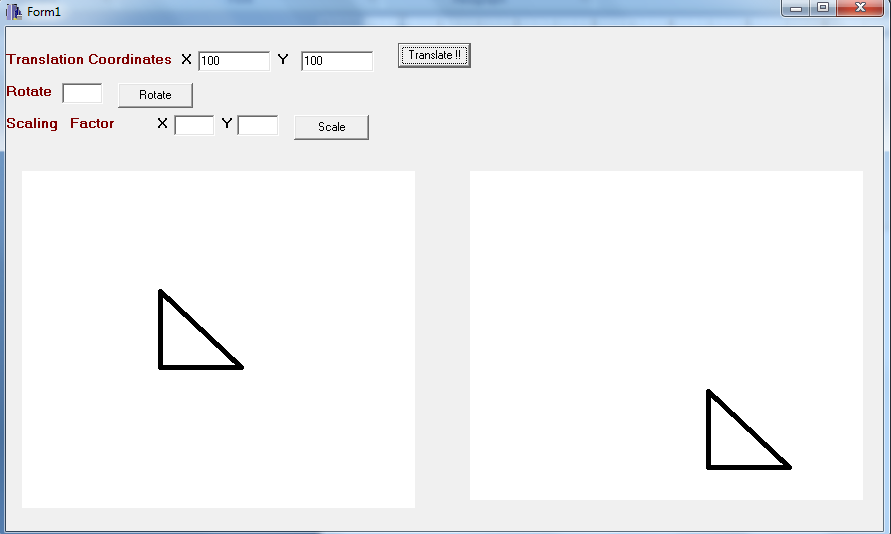
//---------------------------------------------------------------------------

**Output Screen**

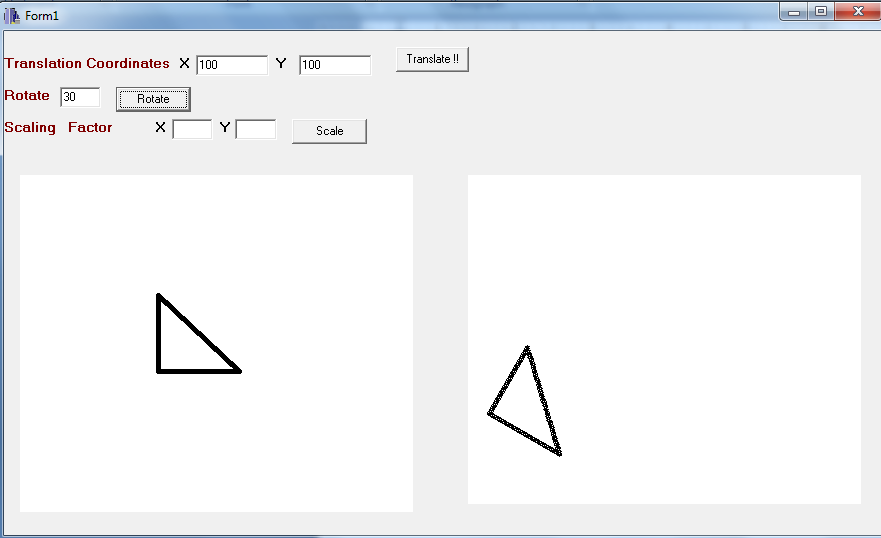
1. **Input Screen**

****

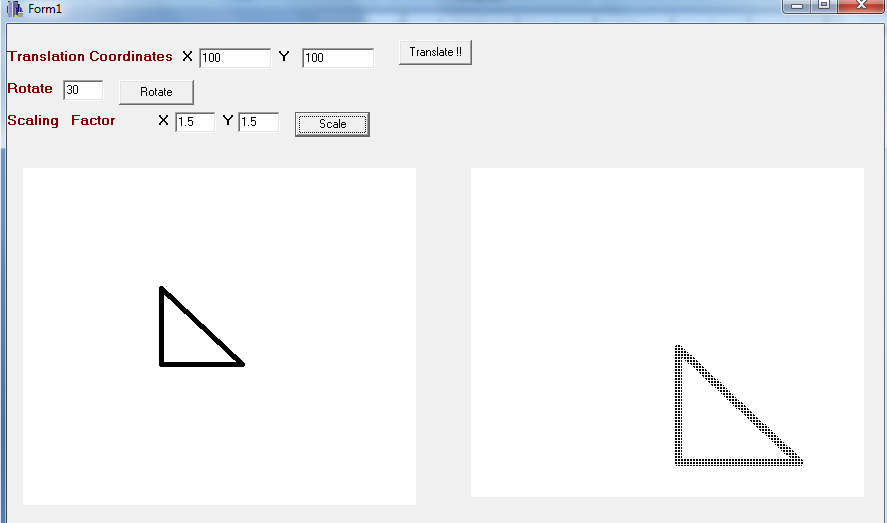
1. **Translation**

****

1. **Rotate**

****

1. **Scale**

****

**Conclusion**

Hence, all transformation i.e. translation, rotation and scaling is done using C++ builder.